Screening of the state of urban ecosystem with the use of bioindication method (on the example of Kazan city)

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Abstract

© Published under licence by IOP Publishing Ltd. The urban environment is a complex of natural, natural-anthropogenic and socioeconomic factors that exert a large and diverse impact on urban residents. In addition to traditional environmental monitoring, we propose to use a new bioindication method based on the evaluation of morphological changes in the leaves of Betula pendula Roth by fluctuating asymmetry (FA) to assess the quality of recreational areas. Such screening for the purpose of assessing of the environment state is very informative, since the bioindication assessment is an integral characteristic of the quality of the environment which is under the influence of all the abundance of chemical, physical and other factors. The two-sided symmetry of a leaf was calculated on the sites in the middle of the park zone, on the border of the park and on a roadside strip. The results of the study showed a connection between the FA values and the distance to the highway, and also revealed the absence of significant differences in FA indicators at the surveyed sites, which may indicate insufficient sizes of recreational areas and their insufficient potential to contribute to improving the quality of the environment.

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